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This study investigated the patterns of: (1) correctly perceived emotions, and (2) erroneously perceived emotions (i.e., those which are in fact perceived, when they are not expressed). It also related perception of emotion to (1) race of perceiver and expressor, and (2) sex perceiver and expressor. The experimental design involved a 2x2x2x2 factorial study involving 48 perceivers and 20 expressors (actors) who were photographed enacting seven emotions. Race of perceiver was found significant as were the patterns of both correctly and erroneously perceived emotions. Negroes were superior both in terms of overall accuracy scores as well as correct scores for the individual emotions. (NH)

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***CRC Report series***

Communication Research Center
Boston University

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# PERCEPTION OF EMOTION: DIFFERENCES IN RACE AND SEX OF PERCEIVER AND EXPRESSOR

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## ABSTRACT

A 2x2x2x2 factorial study tested the effects of race and sex of perceivers (Ss, N=48), and race and sex of expressors (actors, N=20) each photographed enacting seven emotions. Race of perceiver was found significant as were the patterns of both correctly and erroneously perceived emotions.

# I

# PROBLEM

Much of our daily social interaction involves nonverbal communication (NVC). Although NVC is a ubiquitous phenomenon, it has not previously received the attention paid to other areas of psychology. A number of questions arise pertaining to NVC which are of considerable interest toward understanding the mechanisms underlying social interactions, whether in the classrooms, in play groups, in occupational or other settings. Is race a significant variable in perception of emotion (POE)? If there are racial subcultural differences in POE, are the cross-race and same-race POEs equal to each other? Are racial differences also significant in the expression of emotion? Are they significant in influencing the patterning of both accurately and erroneously perceived emotions? Are they equal in magnitude to sex differences in POE? Although there are a number of studies dealing with NVC in general, only a few relate to minority group characteristics or concentrate on race and sex variables in POE.

## Previous Findings

The most recent reviews of studies in perception, or recognition of emotion by means of NVC, are by Bruner and Tagiuri (1954), Davitz (1964), and Ekman (1965). These reviews indicate that posed photographs have been the most common stimuli used in the study of recognition of emotion by means of NVC cues. Other kinds of stimuli were utilized by various

researchers, (Bruner and Tagiuri, 1954), such as recording a person's voice, drawings of the human face with interchanging features, the use of people actually present, drawings of real persons, and photographs of a person accompanied by recordings of his voice.

A number of NVC studies arise out of psychiatric settings. Highly sensitive and affect-laden therapist-client interaction places heavy demands on the verbal channel, which in turn leads to the utilization of other (nonverbal) cues both for diagnosis and therapy. Mahl's (1956) investigation of the disturbances, discontinuities, and pauses of silence in the speech patterns of mental patients provides an example of such a study. He found significant correlations between these variables and the amount of anxiety present in the patient. Another study (Mahl, et. al. 1959), related gestures and bodily movements of psychiatric patients to their personality characteristics; its results indicated a significant relationship between tension and motor activity. The findings of Dittman (1962) validate those of Mahl's studies. He was able to relate hand movements to particular moods such as anger, gloom, and calm, and, although unsuccessful in relating anxiety to "linguistic" (verbal) behavior, he succeeded in discriminating between high and low conflict patients on the basis of their NVC (body movement) (Dittman and Wynne, 1961).

Exline (1963), in exploring the function of visual cues, such as glances, during psychiatric interviews, found that stress inhibits eye-contact. In a replication study (Exline, et. al. 1965), his subjects, in an interview situation, evidenced substantially more eye-contact when they listened than when they spoke. In addition, when the subject matter of the interview became embarrassing, the subject's visual contact was reduced to a minimum.

Judging minority group characteristics. Secord, Stritch, and Johnson (1960) have investigated the perception of personality characteristics through the use of nonverbal cues by offering their subjects limited stimulus information (photographs of faces). Their findings indicate that subjects tend to use some form of analogy, a "metaphorical generalization," or a bridge to fill in any information not supplied by the stimulus, and to organize all stimulus information into meaningful structures.

Secord, Bevan, and Katz (1956) and Secord (1959) investigated Negroes and Caucasians as stimuli. The subjects rated Negroes possessing pronounced Caucasian features with, "all the characteristics of a Caucasian," when restricted to the stimulus of a photograph and believing that the person in the photograph was Caucasian. On the other hand, other subjects, on being informed that the photographs were of Negroes, rated these with "all the characteristics of a Negro."

Anisfield, Bongo, and Lambert's (1962) study investigated the relationship between perception of a minority group status and ascription of certain traits to such minority group members. The same actor taped two versions of a speech. In one version he used a "Jewish" accent, while in the other he did not. Those subjects who perceived him as "Jewish" rated him lower on such variables as: height, good looks, and self-confidence, while those who saw him as "English" rated him much higher on these same variables.

Race and sex differences. Gates (1923), working with white children perceivers and a white adult female expressor, found age and sex of perceiver to be significant. Kellogg and Eagleson's (1931) study of Negro children perceivers and a white female adult expressor confirms the significance of sex differences. However, Kellogg finds no difference when he compares his results to those of Gates' white children. Studies have also found sex of expressor differences to be significant (Thompson and Meltzer 1964; Drag and Shaw 1967).

Vinacke's (1949) study used magazine pictures of Caucasians as stimuli. His results indicated that Caucasian subjects, as compared to Oriental ones, were more accurate in identifying emotions of Caucasian faces. A replication study by Vinacke and Fong (1955) similarly indicated that Oriental subjects, as compared to Caucasian ones, were more accurate in identifying emotions expressed in photographs of Oriental faces. In both studies, the magnitude of perceivers' sex differences was greater than that of race.

## II

## METHOD

This study investigated the patterns of: (1) correctly perceived emotions, and (2) erroneously perceived emotions (i.e., those which are in fact perceived, when they are not expressed). It also related POE to the: (1) race of (a) perceiver (b) expressor, and (2) sex of (a) perceiver, and (b) expressor.

A balanced 2x2x2x2 design (below) tested the influence of the sex and race of both the expressor (the person portraying the emotion) and the perceiver (the person making the judgment as to the nature of emotion).

Experimental Design Diagram

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Race of Expressor | W | | | | | | | | N | | | | | | |
| 2 | Sex of Expressor | M | | | | F | | | | M | | | | F | | |
| 3 | Race of Perceiver | W | | N | | W | | N | | W | | N | | W | | N | |
| 4 | Sex of Perceiver | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| 5 | N (for perceivers in each treatment group) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |

W = White N = Negro M = Male F = Female

Subjects

Forty-eight (48) undergraduates made up the sample of perceivers (for the sex and race breakdown of the sample see the Experimental Design Diagram).

Procedure

The twenty (20)expressors in this experiment were professional actors (10 white and 10 Negro; 5 male and 5 female of each race--rows #1 and 2 of the Experimental Design Diagram). Black and white photographs were made of each expressor portraying seven (7) emotions: anger, happiness, surprise, fear, disgust, pain and sadness. Each photograph shows an expressor, 3/4 figure, seated and at 45° angle to the camera. Lighting and background are constant for the 140 photographs.

The perceivers were the forty-eight (48) undergraduate Ss (24 white and 24 Negro, 12 male and 12 female of each race--rows #3 and 4 of the Experimental Design Diagram). Each S was tested individually, with a set of thirty-five (35) photographs (5 actors or 5 actresses--7 emotions for each), presented in random order. After looking at each photograph the S made the judgment from a multiple choice list of the seven emotions. The sequence of emotions in the multiple choice list was randomized for each S.

# III

# RESULTS

Three separate analyses focused on three aspects of the data: (1) total accuracy scores, (2) pattern of accurately perceived emotions, and (3) pattern of erroneously perceived emotions.

1. Total accuracy scores. Results of an Anova utilizing total accuracy scores as D.V. data indicate (Tables 1A and 1B):

   A. Race of perceiver was significantly related to the total accuracy score of POE. Negro perceivers were more accurate than their white counterparts. The statistical significance was found only in terms of main effect ($F=4.980$, $df=1/40$, $p<.05$); interactions with the other variables were insignificant.

   B. Neither sex nor race of expressor nor sex of perceiver significantly influenced the overall accuracy of POE. This was true for both main and interaction effects.

2. Patterns of correctly perceived emotions. Results of an Anova with repeated measures, utilizing number of correct scores for each of the seven emotions as repeated measures, indicated:

A. Race of perceiver significantly ($F=4.980$, $df=1/40$, $p<.05$) influenced the accuracy of perceiving the seven emotions; Negroes perceived them more accurately.

B. The incidence of correct perception varied significantly ($F=37.932$, $df=6/240$, $p<.001$) with emotion (Fig. 1*)--happiness and pain giving the highest and fear and sadness the lowest proportions of correctly perceived emotions.

C. Sex of expressor significantly interacted ($F=11.203$. $df=6/240$, $p<.001$) with the pattern of correctly perceived emotions (Fig. 2)--surprise and fear were perceived more accurately when the expressors were female rather than male.

D. None of the other variables were significant either in terms of main or interaction effects.

3. Patterns of erroneously perceived emotions. Erroneously perceived emotion was one, which was in fact perceived

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*See Appendix for all tables and figures.

when the perceiver did not correctly judge the emotion enacted by the expressor in a photograph. As with the pattern of correctly perceived emotions, an Anova with repeated measures was performed, utilizing the incidence of erroneous perception for each emotion as data for the repeated measures. The results of this analysis indicated:

A. Race of perceiver significantly ($F=4.845$, $df=1/40$, $p<.05$) influenced the incidence of erroneous perception of the seven emotions; white Ss exhibited a higher rate of erroneously perceived emotions.

B. The incidence of erroneous perceptions varied significantly ($F=12.811$, $df=6/240$, $p<.001$) with emotion (Fig. 3)--surprise and disgust giving the highest and pain and sadness the lowest proportions of erroneously perceived emotions.

C. Sex of expressor significantly interacted ($F=3.351$, $df=6/240$, $p<.01$) with the pattern of erroneously perceived emotions (Fig. 4)--surprise and disgust had a higher and fear and pain had a lower incidence of erroneous perception when the expressors were male rather than female.

D. None of the other variables were significant either in terms of main or interaction effects.

## IV

## CONSLUSIONS

Race of perceiver, nature of emotion and sex of expressor influenced perception of emotion from posed photographs. The effect of the race of perceiver can be noted when its influence was examined independently, both on overall accuracy score and on the pattern of correctly perceived scores for the seven emotions; Negroes were superior both in terms of overall accuracy scores as well as correct scores for the individual emotions.

The incidence of both correct and erroneous perception varied with emotion. In addition, both of these patterns -- of correct and erroneous perception of the various emotions -- varied with the sex of expressor. Compared to their male counterparts, female expressors were associated with a higher incidence of correct perception of surprise and fear, a higher incidence of erroneous perception of fear and pain, and a lower incidence of erroneous perception of anger and disgust.

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# APPENDIX

Tables 1A & 1B

Figures 1 - 4

## Perception of Emotion: Means of Total Accuracy Scores

### TABLE 1A

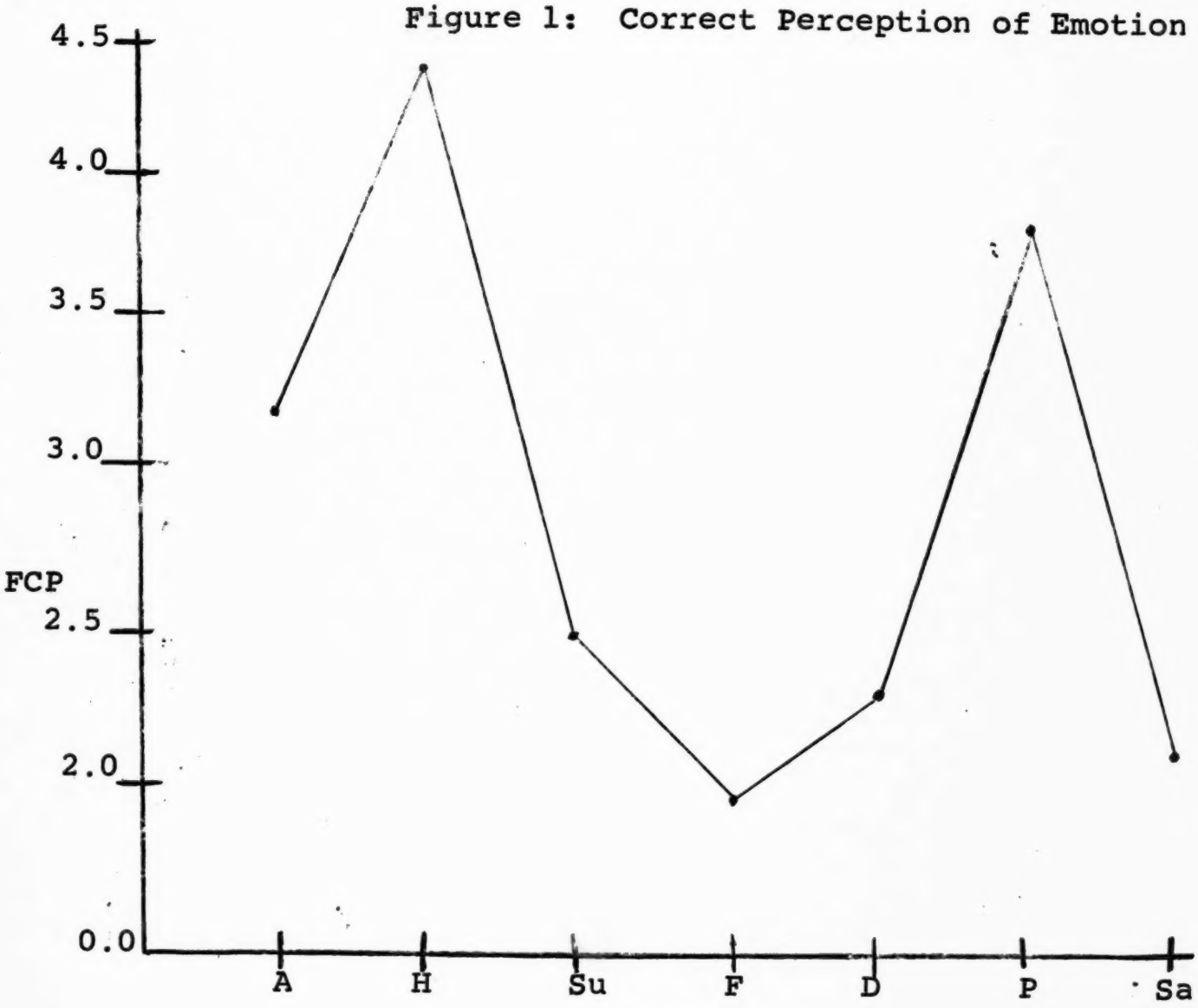
| PERCEIVERS--Ss | | EXPRESSORS--ACTORS: W, M | EXPRESSORS--ACTORS: W, F | EXPRESSORS--ACTORS: N, M | EXPRESSORS--ACTORS: N, F | | |
|---|---|---|---|---|---|---|---|
| W | M | 18.3 | 20.7 | 21.7 | 18.7 | 19.9 | 19.4 |
| | F | 18.0 | 19.7 | 17.0 | 21.0 | 18.9 | |
| N | M | 19.7 | 22.7 | 19.0 | 21.7 | 20.8 | 21.7 |
| | F | 24.3 | 23.3 | 19.3 | 23.0 | 22.5 | |
| | | 20.1 | 21.6 | 19.3 | 21.1 | | |
| | | 20.9 | | 20.2 | | | |

W = White
N = Negro
M = Male
F = Female

### TABLE 1B

| | M | F |
|---|---|---|
| Expressors | 19.7 | 21.4 |
| Perceivers | 20.4 | 20.7 |

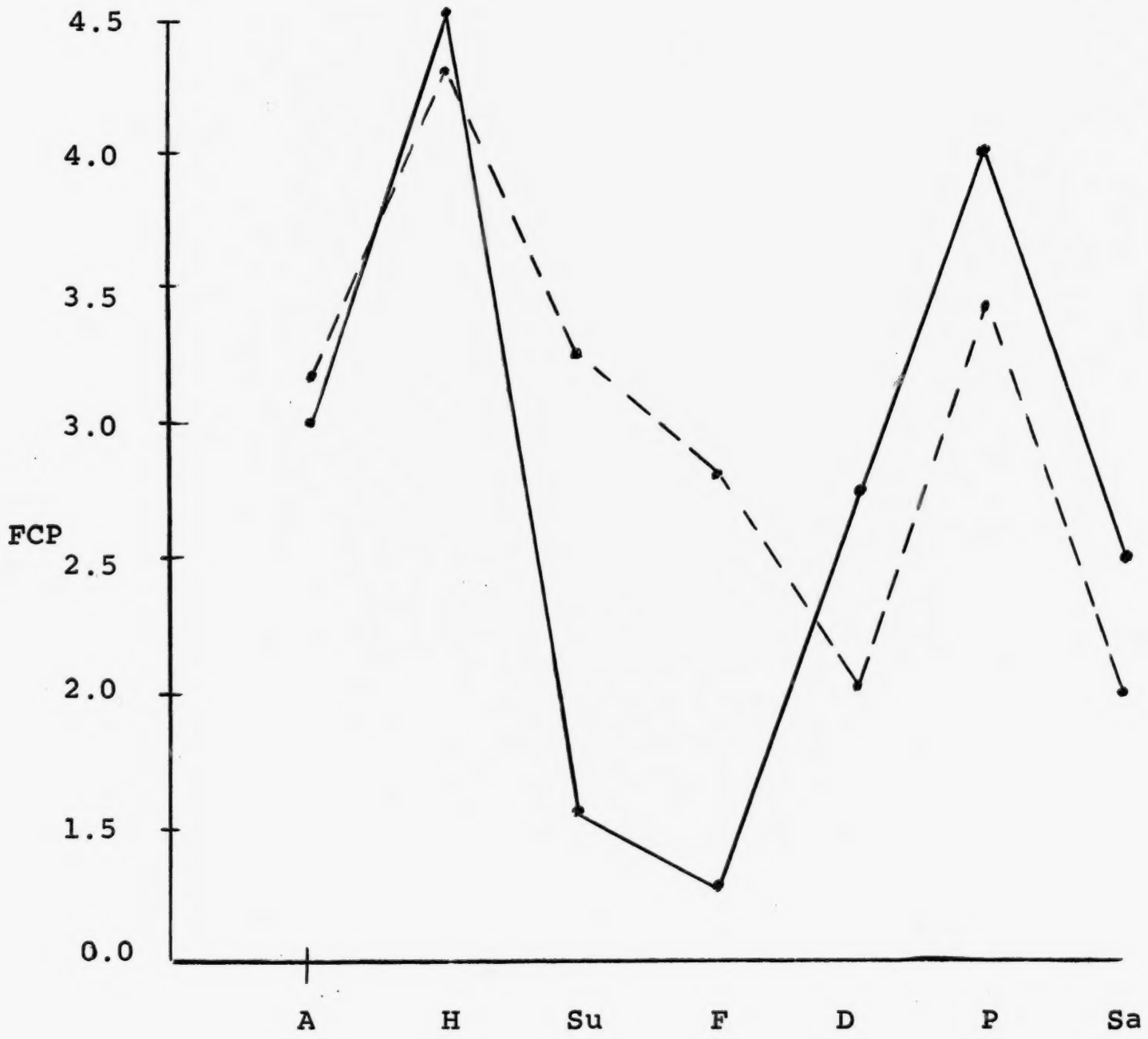
Figure 1: Correct Perception of Emotion




FCP = Frequency of Correct Perception

A = Anger
H = Happiness
Su = Surprise
F = Fear
D = Disgust
P = Pain
Sa= Sadness

Figure 2: Correct Perception of Emotion



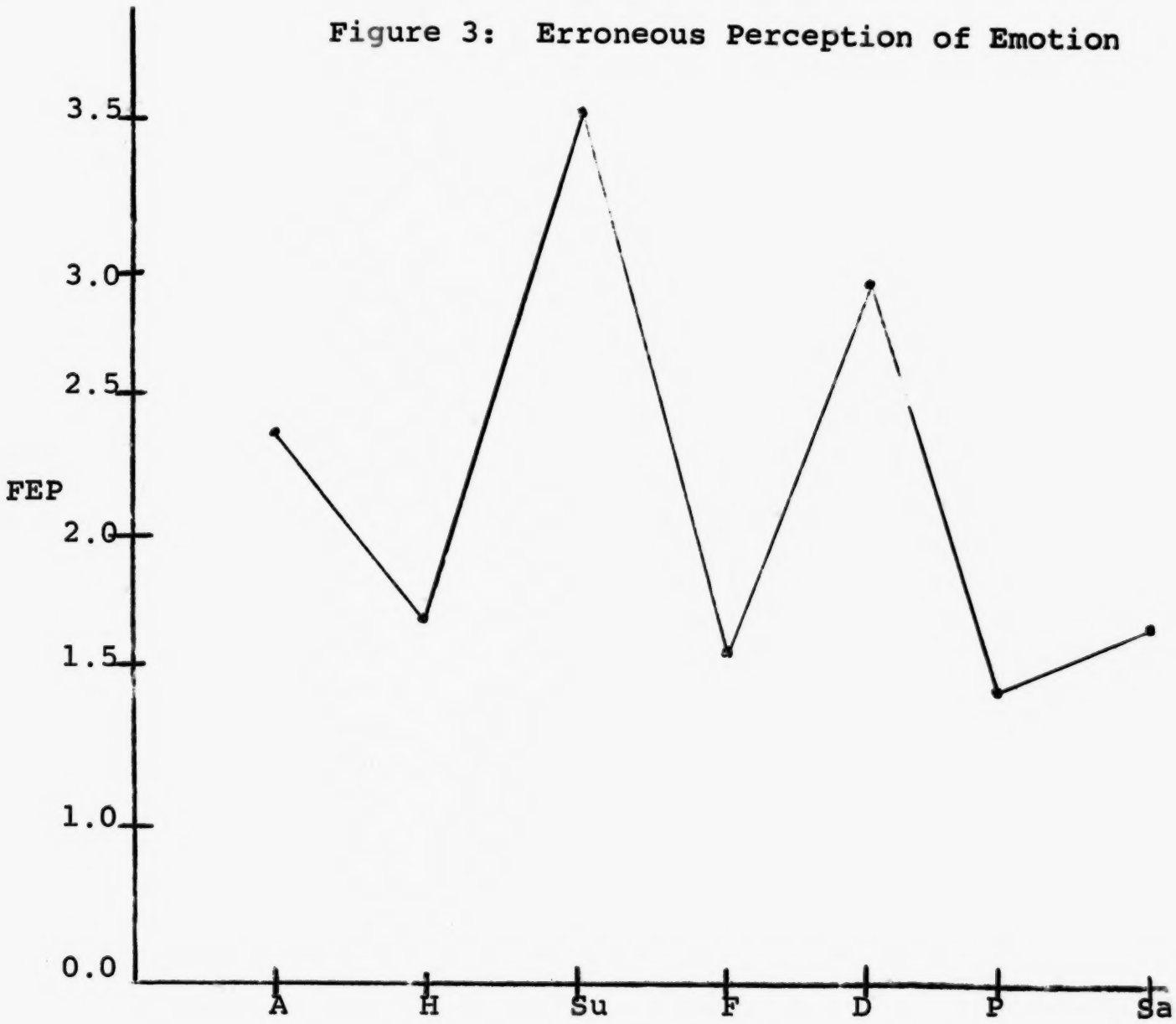

A = Anger
H = Happiness
Su = Surprise
F = Fear
D = Disgust
P = Pain
Sa= Sadness

_____Male Expressors

– — – — – — – — Female Expressors

FCP = Frequency of Correct Perception

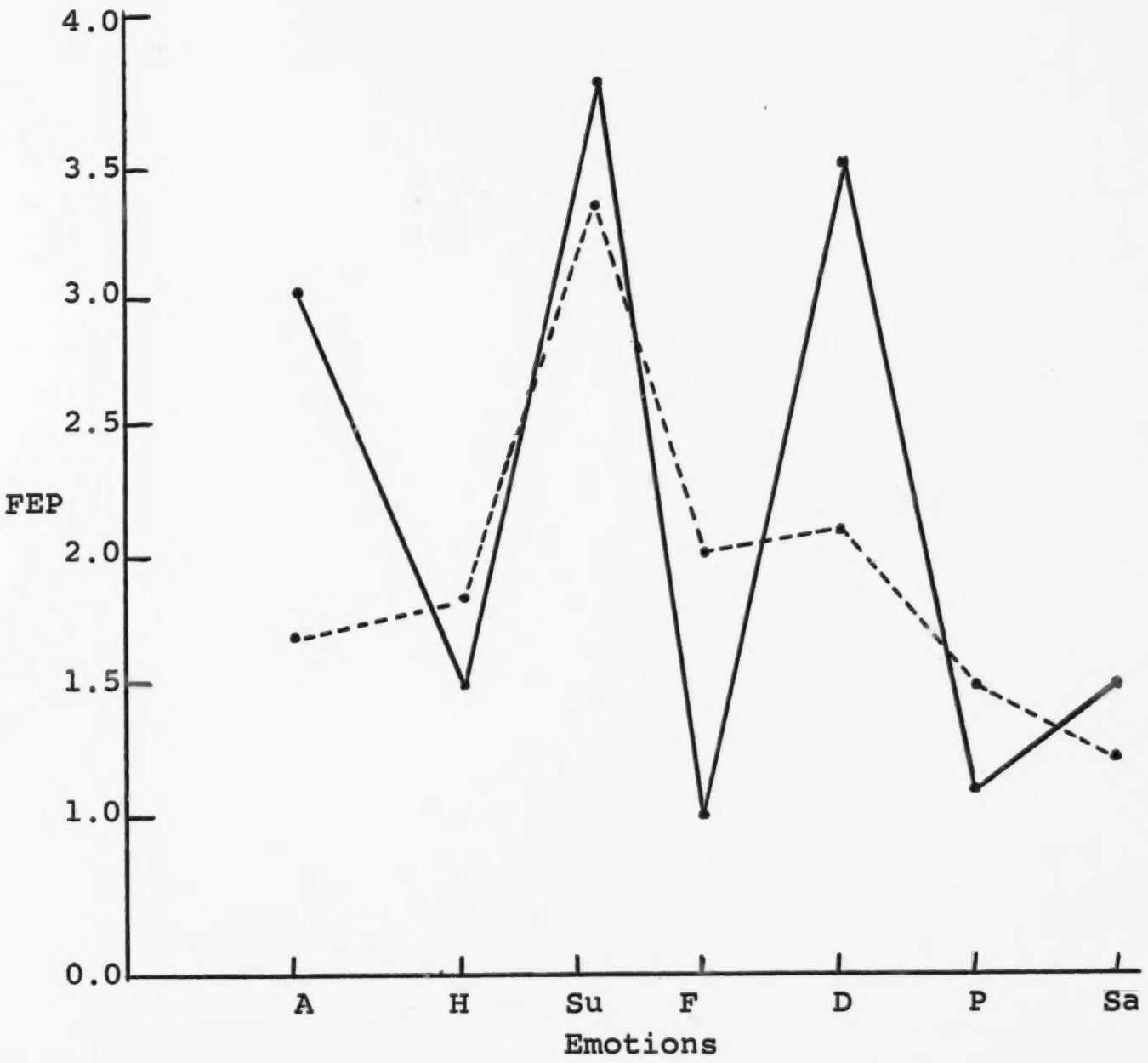
Figure 3: Erroneous Perception of Emotion




FEP = Frequency of Erroneous Perception

A = Anger
H = Happiness
Su = Surprise
F = Fear
D = Disgust
P = Pain
Sa = Sadness

Figure 4: Erroneous Perception of Emotion




FEP = Frequency of Erroneous Perception

A = Anger
H = Happiness
Su= Surprise
F = Fear
D = Disgust
P = Pain
Sa= Sadness

———————————— Male Expressors

– – – – – – – – – – – – – – – – Female Expressors